

Ruh

PENDING CLAIMS

U.S. Patent Application No. 09/326,213
Filed: June 4, 1999

Ruh
non-final
12/18/2000

COJK Reference: WEYE-1-11148

4. The composite of Claim 32 wherein the first, second, and third strata comprise fibers selected from the group consisting of resilient fibers, matrix fibers, and mixtures thereof.

5. The composite of Claim 4 wherein the resilient fibers comprise fibers selected from the group consisting of chemically stiffened fibers, anfractuous fibers, chemithermomechanical pulp fibers, prehydrolyzed kraft pulp fibers, synthetic fibers, and mixtures thereof.

6. The composite of Claim 5 wherein the chemically stiffened fibers comprise crosslinked cellulosic fibers.

7. The composite of Claim 5 wherein the synthetic fibers comprise fibers selected from the group consisting of polyolefin, polyester, polyamide, and thermobondable fibers.

8. The composite of Claim 7 wherein the polyester fibers comprise polyethylene terephthalate fibers.

9. The composite of Claim 4 wherein the matrix fibers comprise cellulosic fibers.

10. The composite of Claim 9 wherein the cellulosic fibers comprise fibers selected from the group consisting of wood pulp fibers, cotton linters, cotton fibers, hemp fibers, rayon fibers, cellulose acetate fibers, and mixtures thereof.

11. The composite of Claim 32 wherein the binder is selected from the group consisting of thermoplastic fibers, soluble bonding mediums, and wet strength agents.

12. The composite of Claim 11 wherein the binder comprises a fibrous binding material.
13. The composite of Claim 12 wherein the fibrous binding material comprises bicomponent binding fibers.
14. The composite of Claim 11 wherein the binder comprises a wet strength agent.
15. The composite of Claim 32 further comprising absorbent material.
16. The composite of Claim 15 wherein the absorbent material comprises a superabsorbent polymer.
17. The composite of Claim 32 wherein adjacent strata have at least one different property.
18. The composite of Claim 32 having a liquid-impermeable bottom surface.
19. The composite of Claim 18 wherein a stratum comprises fibers selected from the group consisting of synthetic fibers, cellulosic fibers, eucalyptus fibers, microfibrillated fibers, and mixtures thereof.
20. The composite of Claim 18 wherein at least one stratum has a density in the range from about 0.3 to about 0.7 g/cm³.
21. The composite of Claim 32 wherein at least one stratum comprises a densified stratum.
22. The composite of Claim 21 wherein the densified stratum expands on liquid contact.
23. The composite of Claim 21 wherein the densified stratum comprises fibers selected from the group consisting of crosslinked cellulosic fibers, chemithermomechanical pulp fibers, and mixtures thereof.

24. The composite of Claim 21 wherein the densified stratum has a density from about 0.1 to about 0.6 g/cm³.

29. The composite of Claim 32 wherein the second stratum overlays the third stratum with respect to its intended use position, the third stratum having a liquid-impermeable bottom surface.

32. An absorbent composite comprising a first stratum, a second stratum, a third stratum, a first transition zone intermediate and coextensive with the first and second strata, and a second transition zone intermediate and coextensive with the second and third strata;

the first stratum comprising first fibers and a binder;

the second stratum comprising second fibers and a binder;

the third stratum comprising third fibers and a binder;

the first transition zone comprising fibers from the first and second strata commingled substantially uniformly across the composite's width and along the composite's length; and

the second transition zone comprising fibers from the second and third strata commingled substantially uniformly across the composite's width and along the composite's length.

37. An absorbent composite comprising a plurality of strata, wherein adjacent strata are separated by a transition zone intermediate and coextensive with adjacent strata, wherein each stratum comprises fibers and a binder, and wherein each transition zone comprises fibers from adjacent strata commingled substantially uniformly across the composite's width and along the composite's length.

39. The composite of Claim 37 wherein the composite comprises at least three strata.

40. The composite of Claim 37 wherein the composite comprises at least four strata.

41. The composite of Claim 37 wherein the composite comprises at least five strata.

42. The composite of Claim 37 wherein adjacent strata have at least one different property.

43. The composite of Claim 37 wherein the lowermost stratum has a liquid-impermeable bottom surface, the lowermost stratum defined as the stratum distal to the uppermost stratum with respect to the composite's intended use position.

44. The composite of Claim 37 wherein at least one stratum comprises a densified stratum expandable on liquid contact.

45. The composite of Claim 37 further comprising absorbent material.

48. An absorbent article comprising the composite of Claim 22.

50. An absorbent article comprising the composite of Claim 15.

51. An absorbent article comprising the composite of Claim 18.

52. An absorbent article comprising the composite of Claim 21.

53. An absorbent article comprising the composite of Claim 32.

54. An absorbent article comprising the composite of Claim 37.

56. The absorbent article of Claim 53 further comprising a liquid pervious topsheet and a liquid impervious backsheet.

57. The absorbent article of Claim 54 further comprising a liquid pervious topsheet and a liquid impervious backsheet.

81. An absorbent composite comprising a first stratum, a second stratum, a third stratum, a first transition zone intermediate and coextensive with the first and second strata, and a second transition zone intermediate and coextensive with the second and third strata;

the first stratum comprising synthetic fibers and a binder;

the second stratum comprising crosslinked cellulosic fibers and a binder;

the third stratum comprising synthetic fibers and a binder;

the first transition zone comprising fibers from the first and second strata commingled substantially uniformly across the composite's width and along the composite's length; and

the second transition zone comprising fibers from the second and third strata commingled substantially uniformly across the composite's width and along the composite's length.

82. The composite of Claim 81 wherein the synthetic fibers comprise polyethylene terephthalate fibers.

83. The composite of Claim 81 wherein the binder is selected from the group consisting of bicomponent binding fibers and a wet strength agent.

84. An absorbent composite comprising a first stratum, a second stratum, a third stratum, a first transition zone intermediate and coextensive with the first and second strata, and a second transition zone intermediate and coextensive with the second and third strata;

the first stratum comprising synthetic fibers and a binder;

the second stratum comprising crosslinked cellulosic fibers and a binder;

the third stratum comprising cellulosic fibers and a binder;

the first transition zone comprising fibers from the first and second strata commingled substantially uniformly across the composite's width and along the composite's length; and

the second transition zone comprising fibers from the second and third strata commingled substantially uniformly across the composite's width and along the composite's length.

85. The composite of Claim 84 wherein the synthetic fibers comprise polyethylene terephthalate fibers.

86. The composite of Claim 84 wherein the binder is selected from the group consisting of bicomponent binding fibers and a wet strength agent.

87. The composite of Claim 84 wherein the cellulosic fibers comprise crosslinked cellulosic fibers.

88. An absorbent composite comprising a first stratum, a second stratum, a third stratum, a first transition zone intermediate and coextensive with the first

and second strata, and a second transition zone intermediate and coextensive with the second and third strata;

the first stratum comprising cellulosic fibers and a binder;

the second stratum comprising crosslinked cellulosic fibers and a binder;

the third stratum comprising cellulosic fibers and a binder;

the first transition zone comprising fibers from the first and second strata commingled substantially uniformly across the composite's width and along the composite's length; and

the second transition zone comprising fibers from the second and third strata commingled substantially uniformly across the composite's width and along the composite's length.

89. The composite of Claim 88 wherein the binder is selected from the group consisting of bicomponent binding fibers and a wet strength agent.

90. The composite of Claim 88 wherein the cellulosic fibers comprise crosslinked cellulosic fibers.

91. An absorbent composite comprising a first stratum, a second stratum, a third stratum, a first transition zone intermediate and coextensive with the first and second strata, and a second transition zone intermediate and coextensive with the second and third strata;

the first stratum comprising synthetic fibers and a binder;

the second stratum comprising crosslinked cellulosic fibers, absorbent material, and a binder;

the third stratum comprising synthetic fibers and a binder;

the first transition zone comprising fibers from the first and second strata commingled substantially uniformly across the composite's width and along the composite's length; and

the second transition zone comprising fibers from the second and third strata commingled substantially uniformly across the composite's width and along the composite's length.

92. The composite of Claim 91 wherein the synthetic fibers comprise polyethylene terephthalate fibers.

93. The composite of Claim 91 wherein the binder is selected from the group consisting of bicomponent binding fibers and a wet strength agent.

94. The composite of Claim 91 wherein the absorbent material comprises a superabsorbent polymer.

95. The composite of Claim 91 wherein the second stratum further comprises fluff pulp fibers.

96. The composite of Claim 91 wherein the second stratum binder comprises a wet strength agent.

97. An absorbent composite comprising a first stratum, a second stratum, a third stratum, a first transition zone intermediate and coextensive with the first and second strata, and a second transition zone intermediate and coextensive with the second and third strata;

the first stratum comprising synthetic fibers and a binder;

the second stratum comprising crosslinked cellulosic fibers, absorbent material, and a binder;

the third stratum comprising cellulosic fibers and a binder;

the first transition zone comprising fibers from the first and second strata commingled substantially uniformly across the composite's width and along the composite's length; and

the second transition zone comprising fibers from the second and third strata commingled substantially uniformly across the composite's width and along the composite's length.

98. The composite of Claim 97 wherein the synthetic fibers comprise polyethylene terephthalate fibers.

99. The composite of Claim 97 wherein the binder is selected from the group consisting of bicomponent binding fibers and a wet strength agent.

100. The composite of Claim 97 wherein the cellulosic fibers comprise crosslinked cellulosic fibers.

101. The composite of Claim 97 wherein the absorbent material comprises a superabsorbent polymer.

102. The composite of Claim 97 wherein the second stratum further comprises fluff pulp fibers.

103. The composite of Claim 97 wherein the second stratum binder comprises a wet strength agent.

104. An absorbent composite comprising a first stratum, a second stratum, a third stratum, a first transition zone intermediate and coextensive with the first and second strata, and a second transition zone intermediate and coextensive with the second and third strata;

the first stratum comprising cellulosic fibers and a binder;

the second stratum comprising crosslinked cellulosic fibers, absorbent material, and a binder;

the third stratum comprising cellulosic fibers and a binder;

the first transition zone comprising fibers from the first and second strata commingled substantially uniformly across the composite's width and along the composite's length; and

the second transition zone comprising fibers from the second and third strata commingled substantially uniformly across the composite's width and along the composite's length.

105. The composite of Claim 104 wherein the binder is selected from the group consisting of bicomponent binding fibers and a wet strength agent.

106. The composite of Claim 104 wherein the cellulosic fibers comprise crosslinked cellulosic fibers.

107. The composite of Claim 104 wherein the absorbent material comprises a superabsorbent polymer.

108. The composite of Claim 104 wherein the second stratum further comprises fluff pulp fibers.

109. The composite of Claim 104 wherein the second stratum binder comprises a wet strength agent.

GER/md